

THE MAIN POINT OF ARGUMENT

REMARKS

Foreign Priority

The acknowledgement, in the Office Action, of a claim for foreign priority under 35 U.S.C. § 119(a)-(d), and that the certified copy of the priority document has been received, is noted with appreciation.

Status Of Application

Claims 1-15 are pending in the application; the status of the claims is as follows:

Claims 1-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,862,264 to Ishikawa et al (hereinafter the "Ishikawa patent").

Drawings

To date, no Notice of Draftsperson's Patent Drawing Review has been received. Applicants respectfully request receipt of this document when it becomes available. Please note that the original drawings filed in the patent application are "formal" drawings.

35 U.S.C. § 103(a) Rejection

The rejection of claims 1-15 under 35 U.S.C. § 103(a), as being unpatentable over the Ishikawa patent, is respectfully traversed based on the following:

The Ishikawa patent shows a process for compressing a digital image known as fractal encoding. The Ishikawa patent specifically distinguishes this technique from DCT encoding, such as JPEG (column 1, lines 19-44). To perform fractal encoding, compression patterns BDP are extracted from each domain block BD of the image. The compression patterns are compared to the image and the pattern having the smallest

differences between the image and the compression pattern is selected (*i.e.* the fractal). The image is then encoded using the selected BDP and 1) an average density value; 2) position information; 3) a reduction ratio α to size the particular BDP at the position; 4) a rotation angle θ ; and 5) a density conversion Z (column 8, lines 2-9). Four rotation angles (0° , 90° , 180° and 270°) are used. In addition, for each angle, an inverted density pattern and a non-inverted density pattern is used. This step does not reduce the density difference, but merely reverses the density within the compression pattern. These factors are combined to provide eight compression patterns BDP1-BDP8 for encoding (column 9, lines 23-33). In the Ishikawa patent, a smoothed image GF is extracted from the original image GA. The difference between the smoothed image GF and the original image GA is then encoded separately as the edge image GE (column 4, line 64 – column 5, line 8). An image with smooth edges allows for more efficient fractal encoding.

In contrast to the cited prior art, claim 1 includes the steps of:

a density conversion unit for reducing a density difference within the edge region detected by said region detector;
a compression unit for compressing the image data within the edge region where the density difference is reduced by said density conversion unit, using discrete cosine transform ...

Wrong!!!

On page 2 of the Office Action, the Examiner asserts that the Ishikawa patent discloses a density conversion unit for reducing a density difference within the edge region (column 9, lines 27-32). However, the description pointed out by the Examiner is an explanation of reduction/rotation conversion unit 54 as shown in Figure 9, which forms a part of fractal encoding unit 34 as shown in Figure 2. It is understood from Figure 2 that the fractal encoding unit 34 does not compress edge image GE but smoothed image GF. In addition, the smoothing process of step #11 of Figure 1 is not a process for reducing a

density difference. Therefore, the Ishikawa patent does not show or suggest a density conversion unit for reducing a density difference within the edge region. ✓

Furthermore, on page 3 of the Office Action, the Examiner asserts that the Ishikawa patent discloses a compression unit 16 for compressing the image data within the edge region where the density difference is reduced by said conversion unit (Figure 1; and column 9, lines 33-39). However, it is clearly understood from Figure 1 that the edge image GE is not subjected to a process for reducing a density difference before being compressed in reversible compression step #16. The process described at column 9, lines 33-39 describes the operation of fractal encoding unit 34 of Figure 2. The fractal encoding unit 34 only receives smoothed image GF to perform fractal image compression step #13. Fractal encoding unit 34 does not receive edge image GE. Reversible encoding unit 37 performs reversible image compression step #16 and receives edge image GE from edge detection unit 35 via image memory 36. Therefore, there is no step where the density difference of edge image GE is reduced. Thus, the reversible image compression step #16 does not compress the image data within the edge region where the density difference is reduced. In other words, the Ishikawa patent does not show or suggest a compression unit for compressing the image data within the edge region where the density difference is reduced.

According to the above, the Ishikawa patent does not disclose the density conversion unit for reducing a density difference within the edge region and the compression unit for compressing the image data within the edge region where the density difference is reduced, which are specific limitations of claim 1 as recited above. To support a *prima facie* case for obviousness based on a single reference, the reference as modified must show or suggest every limitation of the claim. MPEP §2143.03. Thus, the cited reference does not support a *prima facie* case for obviousness and claim 1 is not obvious over the cited prior art. Claims 2-5 are dependent upon claim 1. A claim that is dependent upon a non-obvious claim is also non-obvious. MPEP §2143.03. Therefore, claims 2-5 are also non-obvious.

Also in contrast to the cited prior art, claim 6 includes the steps of:

detecting an edge region within an image data;
reducing a density difference within the edge region;
compressing the image data within the edge region where the
density difference is reduced, using discrete cosine transform ...

As noted above, these features are neither shown nor suggested by the cited prior art. Therefore, claim 6 is not obvious over the cited prior art. Claims 7-10 are dependent upon non-obvious claim 6. Therefore, claims 7-10 are also non-obvious.

Also in contrast to the cited prior art, claim 11 includes a computer program product that performs the steps of:

detecting an edge region within an image data;
reducing a density difference within the edge region;
compressing the image data within the edge region where the
density difference is reduced, using discrete cosine transform ...

As noted above, these features are neither shown nor suggested by the cited prior art. Therefore, claim 11 is not obvious over the cited prior art. Claims 12-15 are dependent upon non-obvious claim 11. Therefore, claims 12-15 are also non-obvious.

Accordingly, it is respectfully requested that the rejection of claims 1-15 under 35 U.S.C. § 103(a) as being unpatentable over the Ishikawa patent, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260.

Any fee required by this document other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin Brown & Wood LLP's Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is a marked-up version of the changes to the specification, which are being made in the attached response to the Office Action dated December 3, 2002.

IN THE SPECIFICATION

The paragraph beginning at page 2, line 13, and ending at page 2, line 20:

However, if the mosquito noises are too large, the process of correcting the image data in the edge region by treating the image data with the density value below a specified value as noises may inadvertently delete a part of the original image together with the mosquito noises. Therefore, it is necessary to reduce the generation of the mosquito noises themselves in order to [removing] remove the mosquito noises without losing [the] part of the original image.